

## Q-Motion® Miniature Rotation Stage

Minimum Dimensions: 22 mm Turntable Diameter



### Q-622

- Only 22 mm in width and 10 mm in height
- Direct position measurement with incremental encoder with 0.55  $\mu$ rad resolution
- Up to 2.2  $\mu$ rad minimum incremental motion
- Velocity 70  $^{\circ}$ /s
- Mountable on the Q-522 linear stage without adapter
- Suitable for vacuum to  $10^{-6}$  hPa, versions to  $10^{-9}$  hPa available

### Piezoelectric inertia drive

Piezo inertia drives are space-saving and affordable piezo-based drives with relatively high holding forces and a virtually unlimited travel range. The inertia drive principle is based on a single piezoelectric actuator that is controlled with a modified sawtooth voltage provided by special driver electronics. The actuator expands slowly and moves the runner. Due to its inertia, the runner is unable to follow the subsequent fast contraction of the actuator and remains at its position. With an operating frequency of up to 20 kHz, the drives acting directly on the runner and achieve velocities of max. 70  $^{\circ}$ /s

### Application fields

Microassembly, Photonics, Optical alignment, Microscopy, Beamline instrumentation, Semiconductor technology, Testing

## Specifications

Motion and positioning	Q-622.930	Q-622.900	Q-622.90U	Unit	Tolerance
	Miniature rotation stage with position sensor for closed-loop operation	Miniature rotation stage without position sensor	Miniature rotation stage, without position sensor for ultrahigh vacuum to $10^{-9}$ hPa		
Active axis	$\theta_z$	$\theta_z$	$\theta_z$		
Rotation range	>360	>360	>360	°	
Integrated sensor	Incremental encoder	–	–		
Sensor resolution	0.55	–	–	$\mu\text{rad}$	
Minimum incremental motion	2.2	100 <sup>(1)</sup>	100 <sup>(1)</sup>	$\mu\text{rad}$	typ.
Unidirectional repeatability	3	–	–	$\mu\text{rad}$	
Maximum velocity, open loop	70	70	70	°/s	

(1) open loop

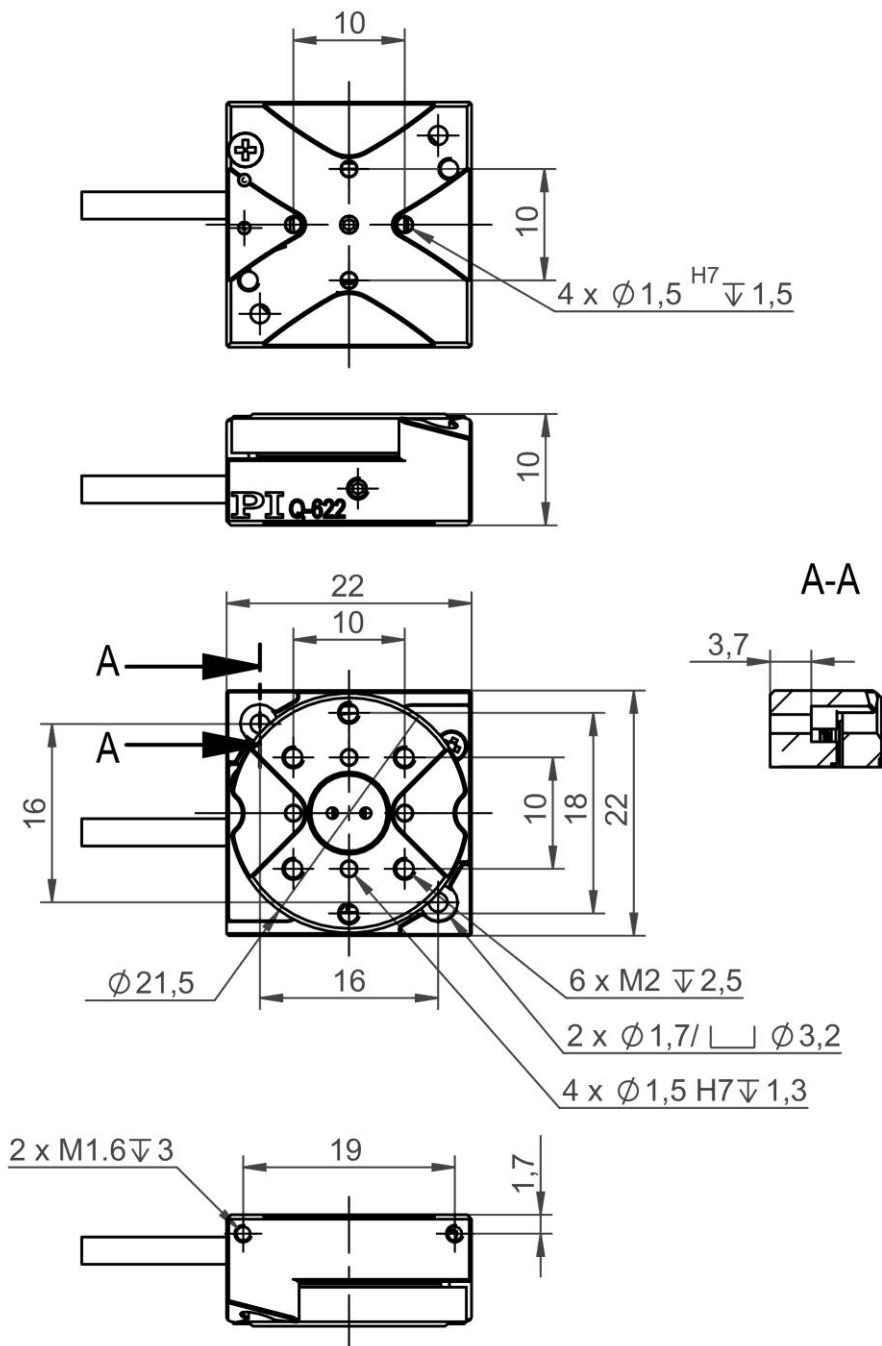
Mechanical properties	Q-622.930	Q-622.900	Q-622.90U	Unit	Tolerance
Load capacity	1	1	1	N	
Holding torque, power off	6	6	6	mN·m	min.
Torque	5	5	5	mN·m	typ.
Length	22	22	22	mm	
Width	22	22	22	mm	
Height	10	10	10	mm	
Turntable diameter	22	22	22	mm	

Drive properties	Q-622.930	Q-622.900	Q-622.90U	Unit	Tolerance
Motor type	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive		

Miscellaneous	Q-622.930	Q-622.900	Q-622.90U	Unit	Tolerance
Operating temperature range	0 to 40	0 to 40	0 to 40	°C	
Material	Aluminum, steel	Aluminum, steel	Aluminum, steel		
Mass without cable	15	12	12	g	
Cable length	1	1	1	m	
Connector	Sub-D 15 (m)	Sub-D 15 (m)	Sub-D 15 (f)		
Recommended electronics	E-873.1AT, E-873.3QTU, E-873.10C885	E-872.401	E-872.401		

For operation in a vacuum, we recommend a reduced duty cycle of 20% and a reduced rotation speed of 50% compared to a standard environment. Ask about customized versions.

## Drawings / Images



Q-622, dimensions in mm

## Ordering Information

### **Q-622.930**

Q-Motion® rotation stage, piezoelectric inertia drive, >360° rotation range, incremental encoder, 0.55 µrad resolution, 5 mNm torque, 22 mm diameter, vacuum compatible to 10<sup>-6</sup> hPa

### **Q-622.900**

Q-Motion® rotation stage, piezoelectric inertia drive, >360° rotation range, without position sensor for open-loop operation, 5 mNm torque, 22 mm diameter, vacuum compatible to 10<sup>-6</sup> hPa

### **Q-622.90U**

Q-Motion® rotation stage, piezoelectric inertia drive, >360° rotation range, without position sensor for open-loop operation, 5 mNm torque, 22 mm diameter, vacuum compatible to 10<sup>-9</sup> hPa